

Appl. No. : 10/672,906
Filed : September 25, 2003

REMARKS

In response to the Office Action mailed July 5, 2007, Applicant has amended the application as above. No new matter is added by the amendments as discussed below. Applicant respectfully requests the entry of the amendments and reconsideration of the application in view of the amendments and the remarks set forth below.

Discussion of Claim Amendments

Claims 21 and 30 have been amended. Upon the entry of the amendment, Claims 21-38 are pending in this application. The amendments to Claims 21 and 30 are supported by, for example, the specification at page 15, paragraph 2. Thus, no new matter has been added to the claims. Entry of the amendment is respectfully requested.

Discussion of Rejection of Claims Under 35 USC § 103(a)

The Examiner has rejected Claims 21, 28-30, 37 and 38 under 35 U.S.C. §103(a), as being unpatentable over Noh et al. (U.S. Patent No. 6,646,707) in view of Choi et al.(U.S. Patent No. 6,429,918 B1) or as being unpatentable over Noh and Choi in view of Kim et al. (U.S. Patent No. 6,771,343). Applicant respectfully submits that all pending claims are allowable over the cited prior art as discussed below.

Standard of Prima facie Obviousness

In order to provide a *prima facie* showing of obviousness under 35 U.S.C. § 103, all the claim limitations must be taught or suggested by the prior art. See, e.g., *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974); MPEP 2143.03.

Discussion of Patentability of Independent Claims 21 and 30

Each of independent Claims 21 and 30, as amended, recites, among other things, a plurality of liquid crystal molecules disposed between the first and the second substrate and *transformed from splay state to bend state* by the common electrode. In one embodiment of the

claimed invention, at first the liquid crystal molecules in the entire pixel region are in the splay state. Then, a voltage is applied to the common electrode to transform the liquid crystal molecule over the common electrode from the splay state to the bend state during operation. The liquid crystal molecules in the whole pixel region exhibit the bend state. *See, e.g.*, specification at page 15, paragraph 2.

Applicant respectfully submits that none of the cited prior art references teach or suggest "a plurality of liquid crystal molecules disposed between the first and the second substrate and transformed from splay state to bend state by the common electrode" as recited in Claims 21 and 30. In particular, Noh discloses a fringe field switching mode LCD. Noh teaches, in connection with Figure 4B, that when voltage is not applied, liquid crystal molecules (100a, 100b, 100c) are arranged, the long side thereof being parallel to rubbing axis (R). When voltage is applied, a fringe field is generated due to voltage difference between counter electrode and pixel electrode, thereby rotating clockwise liquid crystal molecules (100b) disposed on the upper part of the reference slit (S1) and counterclockwise liquid crystal molecules (100c) disposed on the lower part thereof. In other words, the Noh reference at best teaches that the liquid crystal molecules are clockwise or counterclockwise rotated. However, Applicant respectfully submits that there is no disclosure or teaching in Noh regarding "a plurality of liquid crystal molecules transformed from splay state to bend state." In view of the above, Applicant respectfully submits that Noh does not teach or suggest "a plurality of liquid crystal molecules disposed between the first and the second substrate and transformed from splay state to bend state by the common electrode."

Choi discloses a liquid crystal display. Referring to Figure 3 of Choi, the distance between the branches (16a) of the counter electrode (16) and the strips (17a) of the pixel electrode (17) is sufficiently narrower than that of the cell gap thereby forming a fringe field between the branches (16a) of the counter electrode (16) and the strips (17a) of the pixel electrode (17). Due to this fringe field, all liquid crystal molecules on and between the branches

(16a) of the counter electrode (16) and the strips (17a) of the pixel electrode (17) are driven. That is, the Choi reference at best teaches to use a fringe field to drive liquid crystal molecules. However, Applicant respectfully submits that there is no disclosure or teaching in Choi regarding "a plurality of liquid crystal molecules *transformed from splay state to bend state*." In view of the above, Applicant respectfully submits that Choi does not teach or suggest the above-indicated feature of the claimed invention.

Kim discloses a liquid crystal display. Referring to Figure 1A of Kim, the crystal molecules near the short sides of the partitions (91-93) gradually vary their tilt directions depending on their positions. The storage electrode wire (30-34) near the short sides of the partitions (91-93) generates an electric field for each domain, which forces the liquid crystal molecules to align in a direction and thus prevents the positional variation of the liquid crystal. However, Applicant respectfully submits that there is no disclosure or teaching in Kim regarding "a plurality of liquid crystal molecules *transformed from splay state to bend state*." In view of the above, Applicant respectfully submits that Kim does not teach or suggest the above-indicated feature of the claimed invention.

In view of the above, Applicant respectfully submits that Noh, Choi and Kim, alone or in combination, do not teach or suggest the above-recited feature of the claimed invention associated with "transformed from splay state to bend state" recited in Claims 21 and 30. Therefore, Applicant respectfully submits that independent Claims 21 and 30 are allowable over the prior art of record.

Discussion of Patentability of Dependent Claims

Claims 22-29 and 31-38 depend from base Claim 21 or 30, and further define additional technical features of the present invention. In view of the patentability of their base claims, and in further view of their additional technical features, Applicant respectfully submits that the dependent claims are patentable over the prior art of record.

Appl. No. : 10/672,906
Filed : September 25, 2003

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

CONCLUSION

In view of Applicant's foregoing amendment and remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 10/5/07

By: 

John M. Carson
Registration No. 34,303
Attorney of Record
Customer No. 20,995
(619) 235-8550